DOCUMENT RESUME

ED 312 630 CS 009 842

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TITLE Audio/Visual Aids: A Study of the Effect of Audio/Visual Aids on the Comprehension Recall of Students.
PUB DATE Dec 89
NOTE 33p.; M.A. Thesis, Kean College.
PUB TYPE Reports - Research/Technical (143) -- Dissertations/Theses - Master Theses (042) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Audiovisual Aids; *Elementary School Students; Grade 4; Intermediate Grades; *Reading Comprehension; Reading Research; *Recall (Psychology)

ABSTRACT

A study investigated whether the use of audio/visual aids had an effect upon comprehension recall. Thirty fourth-grade students from an urban public school were randomly divided into two equal samples of 15. One group was given a story to read (print only), while the other group viewed a filmstrip of the same story, thereby utilizing audio/visual aids. Immediately following, a comprehension recall test consisting of 10 questions was administered; only short-term recall was tested. Results indicated that there was no significant effect on comprehension of printed material as a result of using audio/visual aids. (One table of data is included, and 25 references are attached. An appendix contains the printed story and the comprehension recall test.) (Author/SR)

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AUDIO/VISUAL AIDS

A Study of the Effect of Audio/Visual Aids on the Comprehension Recall of Students

By

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Accepted 11/22/89

Presented in partial fulfillment of the requirements
for the Master of Arts Degree
Kean College of New Jersey

December 1989

CS009842

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ABSTRACT

The purpose of this study was to determine if the use of audio/visual aids had an effect upon comprehension recall. Thirty fourth grade students from an urban public school were randomly divided into two equal samples of fifteen. One sample of fifteen was given a story to read (print-only) while the other sample viewed a filmstrip of the same story utilizing audio/visual aids. Immediately following, students were administered a comprehension recall test consisting of ten questions. Due to the time limitation of the test, only short-term recall was tested.

The results indicated that there was no significant effect on the sample as a result of utilizing audio/visual aids to comprehension of printed material. These findings suggest that children can learn useful information about stories and retain just as much from non-verbal/visual sources.

ACKNOWLEDGMENTS

I would like to express my appreciation to my friends and family for their support and guidance while writing this thesis.

Also, thank you to Dr. Mazurkiewicz for his assistance throughout this project.

Special thanks must also be given to Mr. Schorkopf, principal of P.S. 29, and to Mr. Gleason, along with his fourth grade students whose cooperation enabled me to complete this study.

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Audio/Visual Aids

Does the use of audio/visual aids have an effect upon comprehension recall in students?

The answer to this question has eluded researchers for decades. Consequently, many have engrossed themselves in experiments to determine the value and effect of audio/visual aids on comprehension recall.

Because their findings are laced with controversy and discord, researchers in this field can be divided into three categories: for, against, and for/against under certain circumstances. The following references cited represent a sample of these researchers and their findings.

Researchers who have satisfied their null hypothesis include P. Bagget (1979), who compared college students recall of a story in text and silent film form and found that cued recall of structural statements was very similar for both media. J.N. Cole (1977) also experimented with visual aids and reported no effects on recall when he presented students with pictures and printed text. After experimenting with pictures and main idea statements, Koenke (1968) concluded that pictures did not enhance main idea comprehension.

Audio/Visual Aids

Finding audio/visual aids to have effects under certain conditions, Levin and Lesgold (1978) have listed several conditions under which pictures facilitate the learning of oral prose: learners should be children-vs-adults, pictures must overlap with story content, and learning is demonstrated by factual recall.

Other researchers have also found conflicting results, particularly in the area of time factor and students' background. Koenke and Otto (1969) found that sixth graders benefited from audio/visual aids, but third graders did not. J. Peeck's (1974) fourth graders benefited from pictures one day and seven days after reading a story, but not immediately. Rohwer and Harris (1975) found that white children from high socio-economic status but not black children from low socio-economic status profited from pictures.

Still other researchers have concluded that, with the addition of media aids, only certain aspects of comprehension can be increased. In 1979, M. Fry concluded that pictures increased recall of main ideas in a story but not non-essential details and descriptions. F. Goldberg (1974) showed that pictures could increase learning of material not central to the objectives of a lesson. Other studies have shown that pictures can serve as both advanced

organizers and mathematic functions (Bransford and Johnson-1972, Snowman and Cunningham- 1975).

Researchers who fully support the use of audio/visual aids include Rohwer and Matz (1975). After presenting printed text- vs- pictorial illustrations, results confirmed that pictorial augmentation was more effective than just using print. Gwen Nugent (1982) presented a story using seven different media combinations. Her results indicated that video + print + audio was superior over the rest. Finally, in 1989, Vasu and Howe conducted an experiment involving the effect of visual and verbal modes of presentation on retention of images and words. In general, their results supported their hypothesis that using two modes of presentation has an additive memory effect for the retention of both words and images.

It should be obvious that all researchers do not agree on whether or not the presentation of audio/visual aids has an effect on comprehension recall. Therefore, one can not assume that by simply using audio/visual aids he is indeed enhancing comprehension. In light of the inconsistent findings and controversy surrounding this cause-and-effect aspect of comprehension, I believe this research can be of value to the field of education and educational research by the presentation of evidence supporting my hypothesis.

HYPOTHESIS

To provide additional evidence concerning this subject, an experiment was conducted on the hypothesis that the use of audio/visual aids does not have an effect upon comprehension recall.

DEFINITIONS

Audio Aids- Any media used to communicate using sound, such as records or cassette tapes.

Audio/Visual Aids- Media using the combination of audio and visual aids to communicate such as television or filmstrips with audio recording.

Media- The graphic, photographic, electronic, or mechanical means for arresting, processing, and reconstructing visual or verbal information.

Medium- Any person, material, or event that establishes conditions which enable the learner to acquire knowledge, skills, and attitudes.

Visual Aids- Media used to communicate through the sense of sight such as photographs or filmstrips.

PROCEDURES

The students selected for this study were of above average intelligence and ability as validated by their scores on the Diagnostic Reading Program (DRP) Test (May 1989), which ranged from the fourty-fourth to the ninty-ninth percentiles. It was assumed that the students were from families of similar educational backgrounds and have characteristics representative of a lower to upper middle class since they all attended an urban public elementary school with a diverse socio-economic population.

Thirty fourth grade students were randomly divided into two equal samples of fifteen. One sample of fifteen was given a story to read (print only) while the other sample viewed a filmstrip of the same story utilizing audio/visual aids. For the sake of clarity, these groups will be referred to as Print-Only and Audio/Visual Aids.

Immediately following, students were administered a comprehension recall test consisting of ten questions. These questions were neither subjective nor related to filmstrip photos themselves. Instead, they were objective and text based. Due to the time limitation of the test, only short term recall was tested.

RESULTS

To analyze the results, mean scores of the comprehension tests were compiled and compared utilizing students' t test to determine if there was any significant difference between the means of the two groups as a result of the audio/visual aids in addition to the materials used.

Table I

Comparison of Print-Only and Audio/Visual Aids Samples

Sample	Mean	SD	t
Print-Only	82	13.34	.43
Audio/Visual Aids	83	12.64	

Table I illustrates the findings in respect to the Print-Only Group and the Audio/Visual Aids Group. As indicated by the table, a t of .43 was computed denoting that there was no significant effect on the sample as a result of utilizing audio/visual aids to comprehension of printed material.

CONCLUSIONS AND IMPLICATIONS

Evidence from this study supports the basic hypothesis that the use of audio/visual aids does not have an effect on comprehension recall. Findings suggest that children are learning useful information about stories and retaining just as much from non-verbal/visual sources, the very sources given low priority in most elementary school curricula. Perhaps this can be attributed to the Print-Only students own use of imagery and facilities of recall instead of relying on pre-fabricated pictures and sound. Another possibility that can be introduced is that the students' individual learning styles are at work. Whatever the case may be, it is important to realize that, just as individuals are complex, so is the route to understanding the reasons behind their behavior and best learning modes. With this in mind, the results of this study imply further research into the area of media presentation and comprehension recall.

Because of the limitations of this experiment regarding class size, class environment, age and intelligence of the subjects, time limit, and the materials used; it is recommended that replication of this study using a variety of samples and materials might prove beneficial to this area of research.

THE EFFECT OF AUDIO/VISUAL AIDS ON COMPREHENSION:

RELATED RESEARCH

Audio/Visual Aids

One might assume that multi-media presentations would indeed increase the chance of comprehension recall among students. However, according to prior research, a unanimous vote would not be cast in this direction. Comparatively, researchers on this subject fall into either one of three categories: for, against, or for/against under certain conditions.

In 1972, Joel Levin used fifty-four fourth graders as subjects to test his hypothesis. They were given stories in either printed or pictorial form. Half who were given the printed version received a visual imagery organizational strategy prior to studying the passage. As predicted, imagery organization facilitated comprehension of the story with the strategy being differently effective for two kinds of poor readers. His prediction that poor readers would benefit relatively more from a pictorial representation than would good readers was not supported statistically.

Others researchers who have satisfied their null hypothesis include P. Bagget (1979), who compared college students' recall of a story in text and silent film form and found that cued recall of structural statements was

very similar for both media. This study has shown that a viewer does segment a story told via a movie without words in a fashion similar to that of a person hearing a text with the same episodic structure, and that the statements of exposition, complication, and resolution which the subject produces are almost identical to those of a person studying a text.

J.N. Cole (1977) also experimented with visual aids and reported no effects on recall when he presented tenth grade students with pictures and printed text.

To prove his null hypothesis, Koenke (1968) had pictures drawn to illustrate the main ideas of short, expository paragraphs and then attempted to measure the effects of the pictures upon children's main idea statements. He concluded that pictures did not enhance main idea comprehension.

After collaborating with A.M. Lesgold in 1978, however, Levin found that under certain conditions, pictures added to print or audio did have a positive effect on young children's prose comprehension. In fact, they have listed several conditions under which pictures facilitate the learning of oral prose: learners should be children -vs-

adults, pictures must overlap with story content, and learning is demonstrated by factual recall.

In addition, numerous studies were conducted, most of which measure certain aspects of reading comprehension and report conflicting results. Such studies were performed by K. Koenke and W. Otto (1969), whose study was designed to examine the extent to which content relevant pictures contribute to children's comprehension of the main idea inherent in a printed passage. Subjects were tested individually and asked for an oral response. It was found that sixth graders benefited from audio/visual aids but third graders did not. Since Koenke (1968) found under similar conditions that pictures did not enhance the main ideas evoked by short expository paragraphs, it may be that pictures enhance main idea responses to longer passages only.

On the other hand, J. Peeck's (1974) fourth graders benefited from pictures one day and seven days after reading the story but not immediately. At retention testing, the experimental condition (text with illustrations) produced higher scores than the control group (text without illustrations) for questions concerning exclusively pictorial information and questions concerning correctly

illustrated text contents. Significant differences appeared between testing within one day and one week but not in immediate testing. This suggests that the facilitative effect of illustration on the retention of text elements is primarily a phenomenon of delayed retention testing.

W. Rohwer and W. Harris (1975) found that white children from high socio-economic status but not black children from low socio-economic status profited from pictures. Results of their study indicate that the degree of success with which information is conveyed to children varies with the background of the child, the media of presentation, the type of information to be acquired and the performance used to index acquisition.

Other researchers have concluded that, with the addition of media aids, only certain aspects of comprehension can be increased. In 1979, M. Fry concluded that pictures increased recall of main ideas in a story but not non-essential details and descriptions. She had fourth and sixth graders write down all they could remember of the story immediately, and again five days later. Pictures did facilitate both immediate and delayed recall, but only of the main ideas.

F. Goldberg (1974) showed that pictures could increase learning of material not central to the objectives of a lesson. Still other studies have shown that pictures can serve as both advanced organizers and mathematic functions (Bransford and Johnson-1972, Snowman and Cunningham-1975).

During one term in a laboratory school, reading was systematically omitted from activities and replaced with film, lecture, oral reading, slides, and other audio/visual aids. After administering a pre-test and post-test for the experiment, Knighten (1979) found the results confusing. Some of the inferences made from the data include: the "literature without reading" class did not affect students vocabulary skills significantly; comprehension skills were enhanced when printed material was used for instruction; some learning styles appear to be oriented toward audio/visual rather than reading materials; students who are used to learning from the printed page may not be prepared to transfer to other formats; and many students did not take learning in the non-reading mode seriously.

More recently, Parkhurst (1982) conducted an experiment involving the use of audio/visual aids presented to facilitate reading comprehension among 332 subjects working individually. His results indicated that visualization

did not automatically result in improved achievement on different educational tasks for students of different reading comprehension abilities. The study demonstrated that individuals achieve at a different level of performance depending on the method of instructional presentation, the type of visuals accompanying printed instruction, and the level of reading comprehension.

In 1980, L.K. Meringoff compared children's apprehensions of an unfamiliar story either read to them from an illustrated book or presented as a comparable televised film. Children exposed to the televised film remembered more story actions, offered estimates of shorter elapsed time and distance traveled for carrying out a repeated story event, and relied more on visual content as basis for inferences. In comparison, children who were read the story from the picture book form recalled more story vocabulary, based their inferences more on textual content, general knowledge, and personal experience.

Contrasts between children's visualization and understanding of a filmed story and of a story in print are drawn in an experiment conducted by L.K. Meringoff (1982). Children viewing a film were found to differ from children hearing the taped story and from control group

subject in terms of the details of their drawings, accuracy of rendering, inferences about the main character, and use of different information sources when reasoning about the story. These findings suggest that the mode of the story presentation may influence cognitive processes used by children as well as offering them new perceptions of familiar things.

Meringoff collaborated with Char in 1982 to study the effects of story-related sounds on children's learning from fiction. A study was conducted in which thirty third and fourth graders and thirty sixth graders listened to one of two audiotapes of Treasure Island episodes. One version used a strictly verbal narration, the other used the same verbal text plus sound effects and music. Results indicated that sounds and music do contribute to children's story understanding.

There have been several researchers who wholeheartedly prefer the presentation of audio and/or visual aids along with printed material, based on their findings.

In comprehensive combined presentations, studies have generally shown that materials using pictures and audio produce a learning superior to that involving just audio

and print. This is reflected in a study conducted by Peng and Levin (1979), where they questioned the endurability of pictorial effects. Using second grade subjects over a period of three days, they found that, although they had more to forget, the children aided by pictures did not forget more than those in a control group. Thus, as far as the picture effect is concerned, it makes no difference when initial testing is done (at least up to the interval of three days); the magnitude of the difference is quite consistent.

Another study was done by Rohwer and Mátz (1975) using one hundred twenty-eight fourth grade children who verified assertions about three prose passages they read. Half of the subjects were white from high status families and half were black from low status families. Oral renditions of each passage were accompanied by either pictorial illustrations of text information or printed versions of the text. Results confirmed the hypothesis that pictorial augmentation would be more effective than print were confirmed across both populations.

James Carey and Michael Hannafin (1981) conducted two experiments involving media presentations. The first experiment involved third grade students who were divided

into three groups. One group heard a short story, another group watched pictures of the same story, while a third group heard and watched a combination of oral and picture presentations. A test was given immediately after and then two weeks later. According to the study, students learned as much or more concrete and abstract information from pictures as from oral prose, and learned the most information from the combination of oral prose with pictures. In their second similar experiment, fourth graders were used for visual-only, verbal-only, or combination audio/visual presentations. They were then tested immediately and then one week later. Again, the audio/ visual group recalled significantly more concrete and abstract information than students in the other groups, while the vision-only group had higher recall in concrete prose than did the verbal-only group. No significant difference between immediate and delayed scores was reported for either experiment.

Soon after, in 1982, Gwen Nugent used 201 fourth, fifth, and sixth graders, broke them down into seven groups (visual + print, visual + print + audio, visual + audio, print + audio, visual, print, audio) and presented a story using these media. Her results indicated that the visual + print + audio was superior over the rest, with visual

+ audio a close second.

In 1984, F. Dwyer and H. DeMelo designed an experiment to investigate the effect of visual testing -vs- non-visual testing. Their findings indicate that the visualized version of the instructional unit significantly improved students' information acquisition of the criterion measures employed in this study on both the immediate and delayed retention tests. Students who received the visual instruction achieved significantly higher scores on all criterion measures than did students whose instruction did not contain visualization on both immediate and delayed retention, respectively.

Finally, in 1989, Vasu and Howe conducted an experiment involving the effect of visual and verbal modes of presentation on children's retention of images and words. Their study stressed the importance of auditory stimuli as well as visual input to the process of retention. The subjects were twenty-two first-grade and twenty-two fourth-grade children randomly assigned to visual and visual-verbal treatment groups. The visual-verbal group heard a description while observing an object; the visual group observed the same object but did not hear a description. The children were tested immediately after

presentation of stimuli and two weeks later. They were asked to represent the information recalled through a drawing and a verbal description. In general, results supported the hypothesis that using two modes of presentation has an additive memory effect for the retention of both images and words.

With the presentation of such findings, it is evident that conflicts and disagreements are sown throughout this area of research. Each experiment and each result is unique and beneficial to our understanding in this area of research. It is then safe to say, according to the three "schools of thought" conveyed above, that further research on this subject can only strengthen existing findings but such are needed.

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APPENDIX

THE BEAR AND THE FOX

The bear was sitting in his house one day feeling very pleased because he had a big pot of honey and a smooth round cheese.

"I'll have a fine meal whenever I feel hungry", he said to himself.

The fox was passing by and he looked in the window and saw the honey and the cheese on the table. He made up his mind he would get some of that delicious food. So the fox went in to call on the bear. "We've been neighbors for a long time. Why don't we go into partnership and share what we have? Then neither of us will go hungry."

The bear wasn't sure it was a good idea. "I've got this good cheese and honey but what do you have to put into the partnership?"

"I have my wits", said the fox,"There is no one who can outsmart me. I'll bring plenty of food to our table. I promise you."

The bear knew that the fox was very clever so he agreed and they set up housekeeping together.

"We must be sure that the cheese and honey are kept safe until we need them", said the fox,"We will lock them up in the storehouse."

So the bear and the fox put the cheese and honey in the storehouse behind the bear's house and locked the door.

The next day the fox came to the bear and said, "I'm not feeling well. I must go see the doctor." And he set off. As soon as the fox was out of sight of the bear he circled round and came back to the storehouse. Very quietly he unlocked the door, went inside and ate all the honey. At the end of the day he came back to the bear's house and told him that the doctor had given him medicine and he felt much better.

"Was the medicine bitter?" asked the bear.
"Oh no", answered the fox, "it was as sweet as honey."

The next day the fox told the bear that he had to go to his uncle's funeral. Again, he circled back and got into the storehouse. This time he ate the cheese. When he came home the bear asked if there had been a feast after the funeral. "Oh yes", said the fox,"in fact, I ate so much I feel as full as a pot of cheese."

Meanwhile, the fox had filled a sack with sausages and bacon, climbed up to the window, jumped down and got safely away. He hid the food in a secret place in the woods where he could get it later. Then he went home to the bear's house, limping and groaning and saying that the farmer had beaten him. The bear went hungry that night, but the fox slipped out by moonlight and had a feast by himself.

The next day they went fishing and caught only a few fish. The fox told the bear to keep all of them, he would do without. The bear had begun to lose faith in the fox's cleverness and felt that somehow he was being cheated, but now he thanked the fox for his generosity.

That night the fox went out again and finished up the rest of the sausages and bacon. Soon the bear was hungry again but he was afraid to go back to Farmer Brown's storehouse.

"Let's just see what's happening on the farm", urged the fox. The bear agreed. They approached cautiously and peered from behind the bushes. Farmer Brown and his sons were gathering apples in the orchard.

The storehouse door had been left open so the men could carry in their loads of apples. The fox and the bear hurried inside. Each one took a sack and began filling it with apples. The fox crammed apples in as fast as he could pick them up, but the bear picked up only the best and took his time.

"We must hurry", said the fox, "The farmer may be coming. I'll just look out the window and see."

When the fox climbed up to the window and put his head out, the window sash fell on him and held him tight.

"Is the farmer coming?", shouted the bear.
"Sh, be quiet, he'll hear you", panted the fox, who was trying to pull himself out from under the sash.
"But is he coming?" bellowed the bear. The farmer heard the commotion and came running.

"We've caught the thief!" he cried, and his sons came to join him.

"I'm not the thief, it's the bear", cried the fox, but they didn't believe him. They pulled him from the window and beat him until he struggled free, slipped between them and ran limping away.

THE BEAR AND THE FOX

Name:_____ October 23, 1989

1. What did the fox contribute to his partnership with the bear? What did the bear contribute?

2. What excuse did the fox give the second time he got into the bear's storehouse to steal the food?

3. What made the goat jump up in alarm and run out of the bear's house?

4. How did they get into Farmer Brown's storehouse the first time? Why?

5. What made Farmer Brown and his sons come running to their storehouse the first time?

6. After the bear and the fox caught a few fish, why did the fox say "he'd do without"?

7. What did the bear finally do to outwit the fox? What happened to the fox?

8. What words would you use to describe the fox?

9. What words would you use to describe the bear?

10. At the end of the story the partnership was "dissolved." What does this mean?